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A comparison between Robotic-assisted and open approaches for large ventral hernias- A Multicenter Analysis of 30 days outcomes using the ACHQC database

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Disclosures

Authors:

Nothing to disclosure:

DLL, RL, SK, AAS, JM, PS

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Introduction

- Over the last few decades, surgical approach for hernia repair has two major areas of focus: open or MIS —and anatomic alterations to repair (component separation).

- Robotic assisted surgery provides better visualization and mobilization of tissues for component separation with the advantages of minimally invasive approach

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Are laparoscopic and open ventral hernia repairs truly comparable?: A propensity-matched study in large ventral hernias

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Objective

We aimed to compare postoperative outcomes in patients who underwent:

Open approach,

Robotic approach,

Large ventral hernia repair (VHR)

Abdominal Core Health Quality Collaborative (ACHQC) Database.

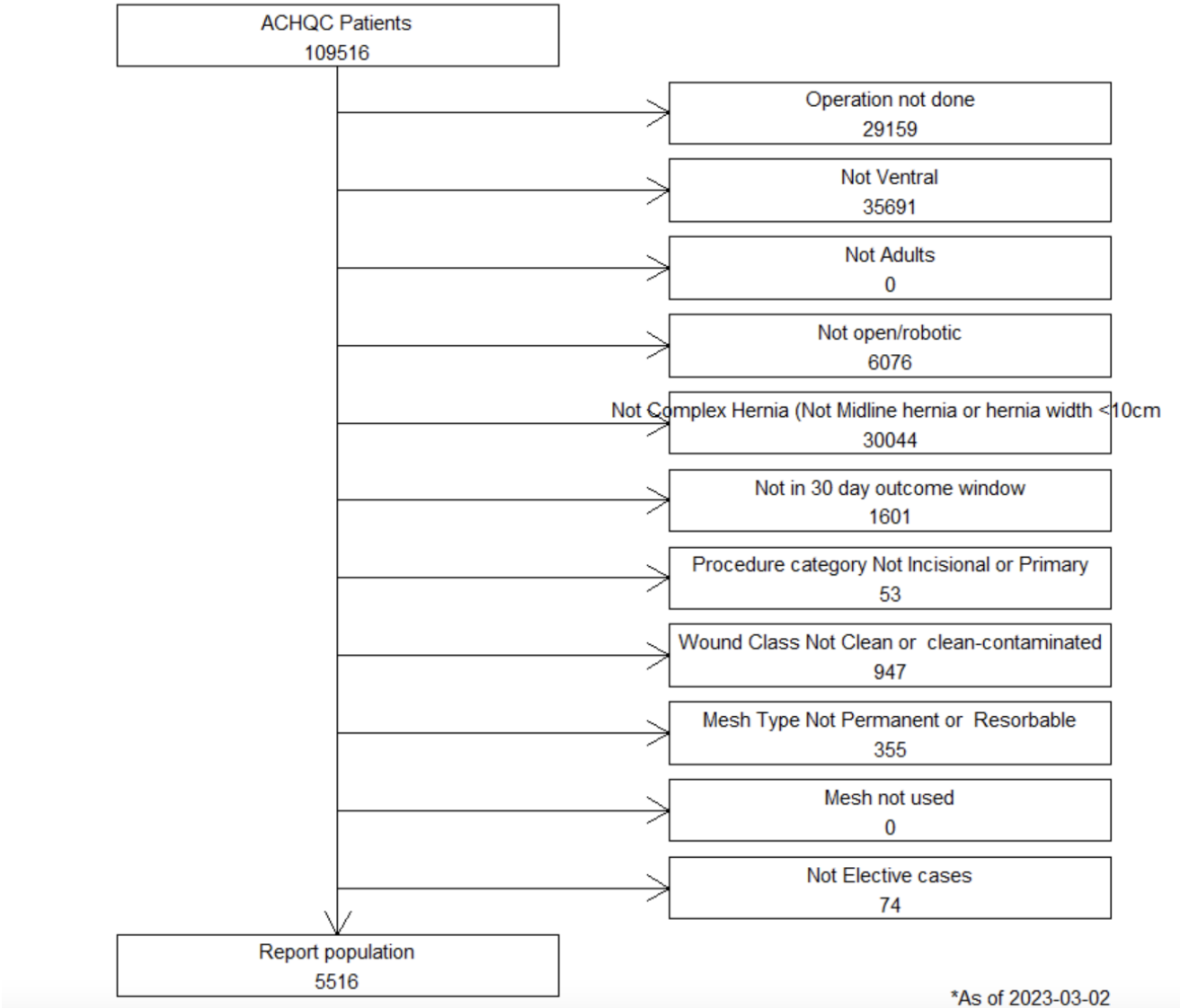
Outcomes of interest

Primary outcomes: SSI an SSO at 30 days

Secondary outcomes: readmissions, reoperation at 30 days and recurrence at 1 year

Inclusion criteria

- Adult patients
- Ventral hernia >= 10 cm
- Primary and Incisional
- Operative approach: Robotic and Open
- 30 day follow up completed
- Wound class: clean or clean contaminated
- Mesh used –permanent synthetic or resorbable synthetic
- Elective cases



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Demographics

	Open N=4,978	**Robotic N=538**	**P-value**
Median Age (IQR)	60 (51-68)	61 (52-69)	0.15
BMI (IQR)	32.7 (28.7-36.6)	33.3 (29.8-38.1)	<0.001
Sex			0.6
Male	2,361 (47%)	262 (49%)	
Female	2,617 (53%)	276 (51%)	
HTN	2,902 (58%)	323 (60%)	0.4
DM	1,220 (25%)	139 (26%)	0.5
COPD	410 (8.2%)	46 (8.6%)	0.8
Current Smokers	306 (6.2%)	52 (9.7%)	0.002

Intraoperative characteristics

	Open N=4,978	**Robotic N=538**	p-value
Hernia width	15 (12-8)	12 (10-14)	<0.001
Hernia length	21 (16-25)	16 (12-20)	<0.001
Fascial closure	4,708 (95%)	524 (97%)	0.005
Component separation	367 (7.4%)	16 (3.0%)	<0.001
Mesh type			<0.001
Permanent Synthetic	4,764 (96%)	532 (99%)	
Resorbable synthetic	214 (4%)	6 (1.1%)	
Mesh width	30 (25- 31)	26 (20-30)	<0.001
Mesh length	30 (30-36)	30 (25-35)	<0.001
Mesh location			<0.001
Onlay	253 (5.1%)	6 (1.1%)	
Inlay	126 (2.5%)	9 (1.7%)	
Sublay	4,599 (92%)	523 (97%)	

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Perioperative outcomes

	Open N=4,978	**Robotic N=538**	P-value
Fixation type			
Suture	3,628 (93%)	290 (80%)	<0.001
Tacks	240 (6.2%)	56 (16%)	<0.001
Adhesive	374 (9.6%)	58 (16%)	<0.001
Barbed Suture	2 (0.4%)	28 (29%)	<0.001
Operative Time (min)			<0.001
0-59	10 (0.2%)	4 (0.7%)	
60-119	361 (7.3%)	28 (5.2%)	
120-179	1,396 (28%)	83 (15%)	
180-239	1,401 (28%)	136 (25%)	
240+	1,808 (36%)	287 (53%)	

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Perioperative outcomes

	Open N=4,978	**Robotic N=538**	P-value
Median Length of Stay	5 (4-7)	2 (1-3)	P<0.001
Readmission 30 days	374 (7.5%)	16 (3.0%)	<0.001
SSI	343 (6.9%)	14 (2.6%)	<0.001
SSO	733 (15%)	92 (17%)	0.14
Recurrence 30 days	5 (0.1%)	1 (0.2%)	0.5
Infected Seroma	21 (2.9%)	1 (1.1%)	0.5
Hematoma	72 (9.8%)	9 (9.8%)	>0.9

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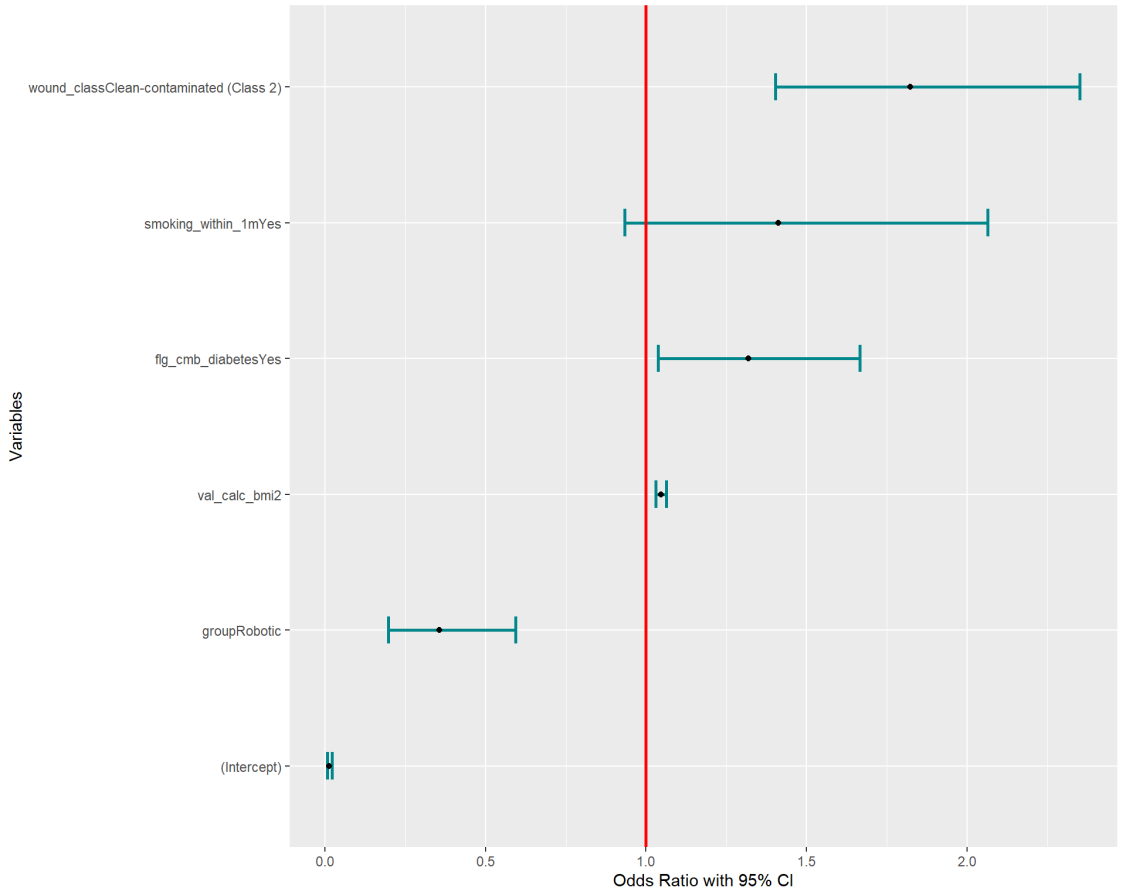
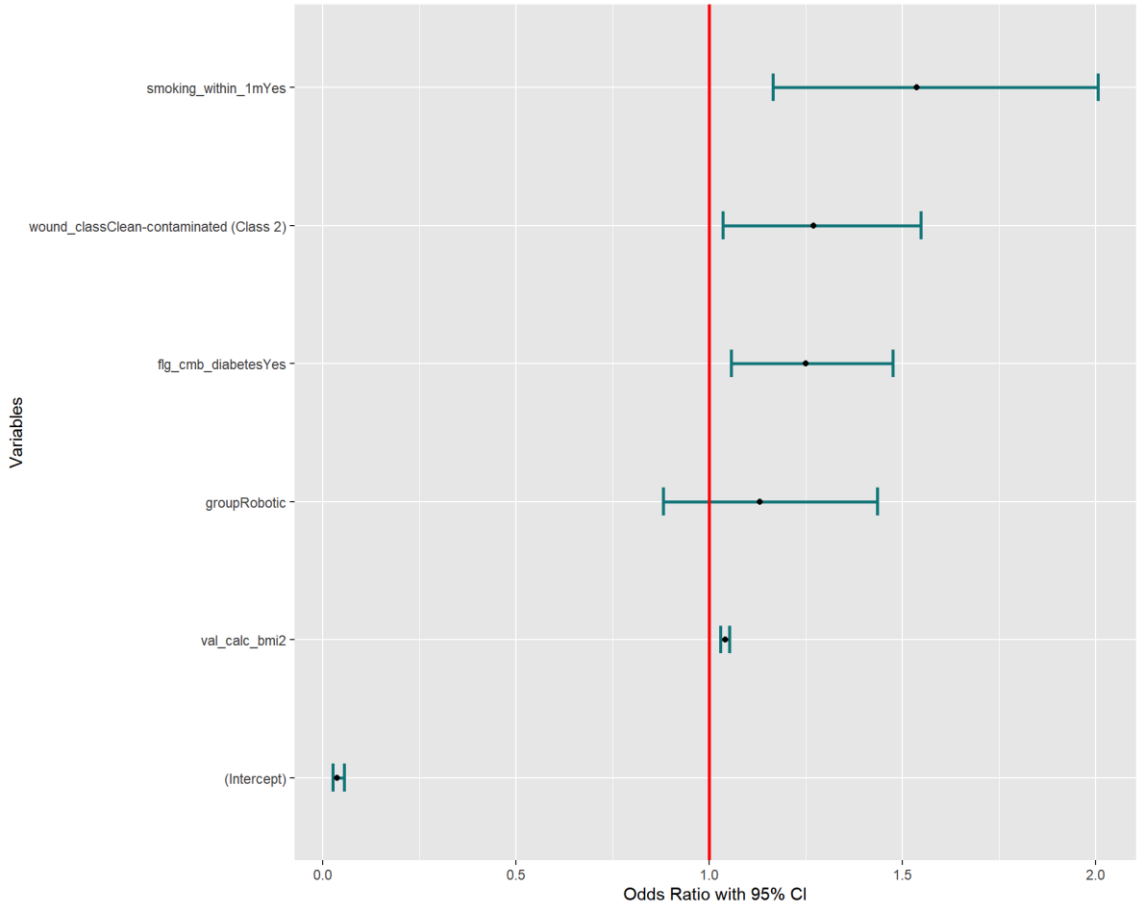
Multivariable Logistic regression

SSI	OR	95% CI	p-value
Robotic Surgery	0.35	0.19 – 0.59	<0.001
Wound class clean contaminated	1.8	1.4 – 2.3	<0.001
BMI	1.04	1.03 – 1.06	<0.001
Smoking	1.4	0.93 – 2.06	0.088
Diabetes	1.31	1.03 – 1.6	0.022



Multivariable Logistic regression

SSO	OR	95% CI	p-value
Robotic Surgery	1.13	0.8 – 1.4	0.32
Wound class clean contaminated	1.2	1.03 – 1.54	0.02
BMI	1.04	1.03 – 1.05	<0.001
Smoking	1.53	1.16 – 2	0.002
Diabetes	1.25	1.05 – 1.47	0.009



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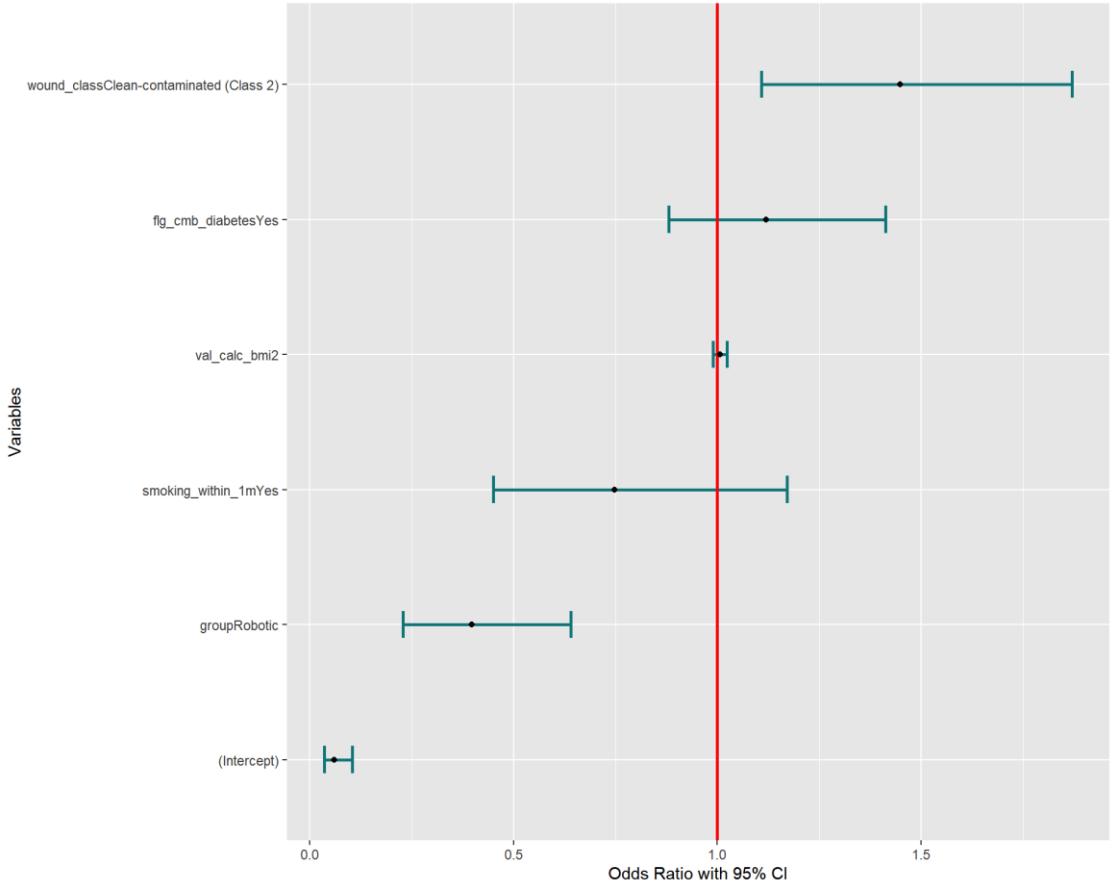
Multivariable Logistic regression

Readmission	OR	95% CI	p-value
Robotic Surgery	0.39	0.22 – 0.64	<0.001
Wound class clean contaminated	1.2	1.03 – 1.54	0.02
BMI	1.04	1.03 – 1.05	<0.001
Smoking	1.53	1.16 – 2	0.002
Diabetes	1.25	1.05 – 1.47	0.009



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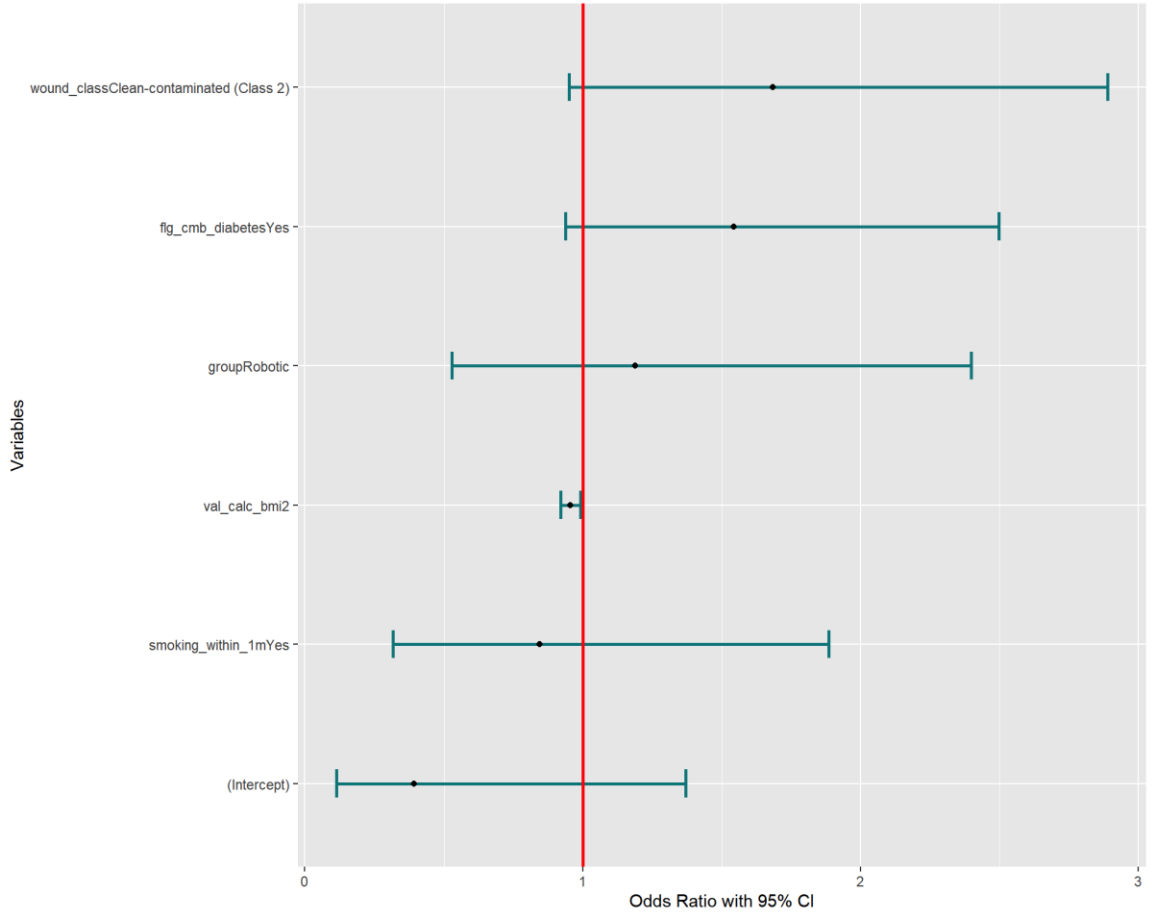
Multivariable Logistic regression

Hematoma	OR	95% CI	p-value
Robotic Surgery	1.18	0.52 – 2.39	0.65
Wound class clean contaminated	1.6	0.95 – 2.88	0.06
BMI	0.956	0.92 – 0.99	0.01
Smoking	0.84	0.31 – 1.88	0.7
Diabetes	1.5	0.9– 2.5	0.08



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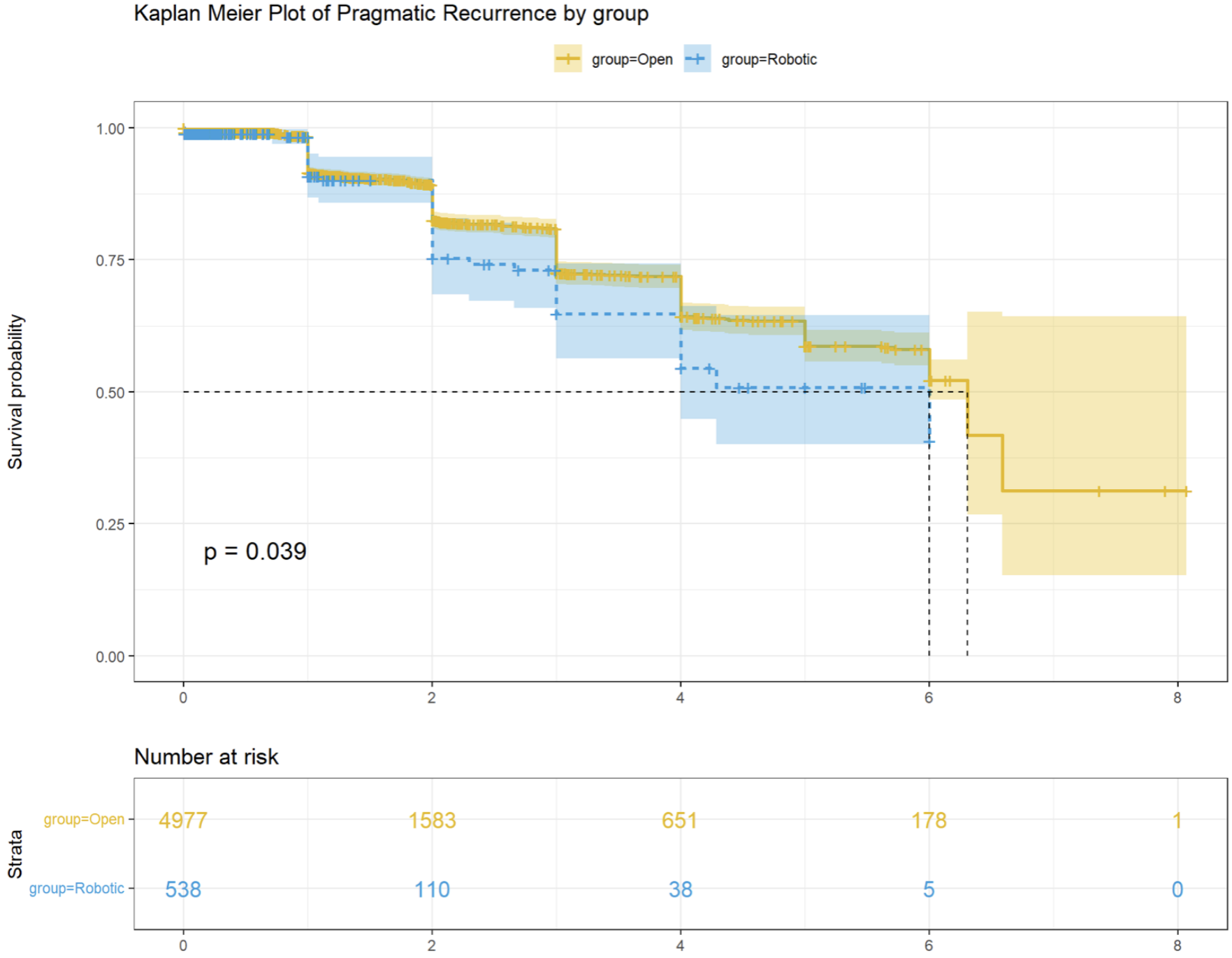

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Limitations

- Retrospective data
- Performance bias
- Attrition bias
- Voluntary input of data in the database
- Dedicated Abdominal Wall repair surgeons

Conclusions

- Robotic approach improves early 30 day outcomes compared to open technique for large VHR.
- There was no difference in SSO at 30 days.

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WORK IN PROGRESS

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Thank you!

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